Marine Protected Area (MPA) Process and Policy Review: Short Summaries of Six MPA Establishment Processes

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Channel Islands Marine Reserves

The Channel Islands hug the coast of central California, protecting a productive marine ecosystem that has earned a reputation as "the American Galapagos." Part of what makes this marine wilderness unique is that it is a transition between the cool waters of the coast of central and northern California and the warm waters that move north from Baja California on the California Countercurrent. Natural variations in water temperature have created distinct habitats, each sustaining a wealth of marine species. There is now evidence that the marine environment around the Channel Islands is in serious decline. Several factors have contributed to these biological declines, including water pollution from marine and land-based sources, climate-driven variability in ocean productivity, and the excessive harvesting of various marine species.

In 1998, the Channel Islands Marine Resources Restoration Committee, which is a group of recreational fishermen and other citizens from Oxnard, California, submitted a proposal for a 20 percent closure of a one-mile zone surrounding the Northern Channel Islands. The proposal aimed to work within the state Fish and Game Commission's (FGC) existing authority to establish ecological reserves. With the support of the National Park Service (NPS), the proposal was brought to public attention and submitted to the FGC for review. The contention the proposal evoked from commercial fishermen threatened to jeopardize the idea of establishing ecological reserves at the Islands. To sustain it, the Channel Islands National Marine Sanctuary (CINMS) staff, in partnership with the California Department of Fish and Game (DFG), and with the support of a coalition of national conservation groups (the Pacific Ocean Conservation Network), reconfigured the proposal into a multi-stakeholder process to involve recreational and commercial fishermen as well as other interests. The new proposal won the support of these stakeholders as well as the FGC. CINMS offered to help support and facilitate the new process.

Timeline: (1938 to present)

- Initial Development (1938 to 1998):
  - 1938: First granted official federal recognition as a national monument. And in 1949, submerged lands within one mile of Anacapa and Santa Barbara Islands were added to Channel Islands National Monument.
  - 1980: Congress designated the Channel Islands as a national park. This law expanded the park to include three more large islands and re-established the park boundary one mile offshore to include the submerged lands and waters in the park, while recognizing the authority of California to manage the living marine resources in the park.
  - 1980: In response to federal proposals to expand offshore oil and gas drilling, local residents and elected officials secured designation of all of the waters within six nautical miles of the islands (1,252 square nautical miles) as a national marine sanctuary.
  - 1998: The FGC received a recommendation to create marine reserves around the northern Channel Islands (Santa Barbara, Anacapa, Santa Cruz, Santa Rosa, and San Miguel Islands).
  - 1999: In response to this proposal and the need for a process, CINMS and DFG developed a joint federal/state partnership to consider establishing marine reserves in the sanctuary.

- Channel Islands Marine Reserve Process (1999 to present):
  - March 4, 1999: The process was presented to (and supported by) the FGC.
  - July 1999: The Sanctuary Advisory Council (SAC), an advisory group to the sanctuary manager, created a stakeholder-based community group called the Marine Reserves Working Group (MRWG).
    - The MRWG agreed to operate by consensus, working with a locally contracted facilitator and a NOAA facilitator.

- SAC established two advisory panels to inform its decision making.
  - Science Advisory Panel
  - Socioeconomic Advisory Panel
- July 1999 through May 2001: The MRWG met monthly and held four public forums to develop consensus and to receive, weigh, and integrate advice from its technical advisors (Science Advisory Panel and Socioeconomic Advisory Panel) and from the general public.
- In May 2001, the MRWG came to consensus on a set of ground rules, mission and problem statement, issues of concern, goals and objectives for reserves, and implementation recommendations. They were not, however, able to arrive at a singular spatial recommendation.
  - During the two-year process, MRWG developed 37 potential marine reserve maps, and in the end, MRWG delivered a composite map that depicted two different reserve network options.
- In August 2001, sanctuary and DFG staff presented the preferred alternative to FGC.
  - The DFG-recommended preferred alternative would establish eleven new state marine reserves, one state marine conservation area where only spiny lobster and pelagic finfish may be taken by recreational anglers, and one state marine conservation area where the commercial and recreational take of spiny lobster and recreational take of pelagic finfish is allowed. These areas comprise approximately 25 percent of sanctuary waters, whereas the initial state phase comprises approximately 22 percent of state waters within the sanctuary.

- Future Plans:
  - At the request of the Pacific Fishery Management Council, the date for a decision by the FGC was postponed until their Monterey, California, meeting December 5-6, 2002.

Objectives: (MRWG areas of consensus)

- To protect representative and unique marine habitats, ecological processes, and populations of interest.
- To maintain long-term socioeconomic viability while minimizing short-term socioeconomic losses to all users and dependent parties.
- To achieve sustainable fisheries by integrating marine reserves into fisheries management.
- To maintain areas for visitor, spiritual, and recreational opportunities that include cultural and ecological features and their associated values.
- To foster stewardship of the marine environment by providing educational opportunities to increase awareness and encourage responsible use of resources.

Current Status/Outcome:

- FGC is scheduled to meet in December 2002 to vote on the recommendation for marine reserves.

Stakeholders:

- Commercial and recreational fishers
- Divers (consumptive and nonconsumptive)
- Conservationists
- General public
- Scientists and resource managers
- Business community
- Nongovernmental agencies:
  - The Ocean Conservancy
  - Environmental Defense
  - Natural Resources Defense Council
  - Pacific Marine Conservation Council
- Governmental agencies:

- U.S. Department of Commerce, National Oceanic and Atmospheric Administration
  - National Marine Sanctuary Program and National Marine Fisheries Service
- U.S. Department of the Interior, National Park Service
- State of California
  - California Resources Agency
    - California Coastal Commission
    - California Department of Fish and Game
      - Fish and Game Commission
    - California Department of Parks and Recreation
    - California State Lands Commission
    - San Francisco Bay Conservation and Development Commission
  - California Environmental Protection Agency
    - State Water Resources Control Board
- Pacific Fishery Management Council

Advisory Groups:

- The Sanctuary Advisory Council (SAC):
  - Members represent the following: general public, tourism, business, recreation, fishing, education, research and conservation interests, local, state and federal government agencies.
- Marine Reserves Working Group (MRWG):
  - Members represent the following: conservation organizations, consumptive and nonconsumptive divers, commercial and recreational fishers, general public, kelp harvesters, state and federal government agencies.
- Scientific Advisory Panel
  - Panel members represent the following: physical oceanographers, biological oceanographers, ichthyologists, invertebrate zoologists, fishery managers, statisticians, ecologists, modelers.
- Socioeconomic Advisory Panel
  - Panel members have expertise in fisheries socioeconomics.

Economic Factors:

- Economic impact information is located in the *State of California Fish and Game Commission Initial Statement of Reasons for Regulatory Action.* According to this document, the potential impacts of DFG's recommended preferred alternative include:
  - The combined maximum potential annual ex-vessel loss of $3,222,810 to commercial fisheries.
  - The maximum potential annual loss in income of $5,720,077 by recreational fishing.
  - The income derived from existing nonconsumptive activities (diving, whale watching, kayaking, sightseeing, and sailing) in proposed reserve sites represents a maximum potential annual income of $1,385,756 generated by nonconsumptive activities.
  - The maximum potential numbers of jobs lost relating to commercial and recreational fishing activities is estimated to be 435, and the existing jobs supported by nonconsumptive activities is estimated to be 37.

Areas of Conflict/Difficulty:

- Recreational fishermen and environmentalists could not agree on the size, shape, and location of marine reserves.
- Recreational fishermen vetoed all no-fishing zones around Anacapa and Santa Barbara, which are the two islands most easily reached by boat from Southern California.

Decision-Support Tools:

- Science Advisory Panel used a geographic information system (GIS) database to analyze proposed reserve sites, identify habitat types, project distributions of fish stocks, and identify areas of high habitat heterogeneity.
- The MRWG used a GIS-based decision-support tool that allowed the user to view ecological and economic data in different reserve configurations.

Enforcement:

- In the Santa Barbara and Ventura county area, three lieutenants and four wardens and boarding officer positions are funded, forming the baseline of MPA enforcement.
- CINMS contributes funds (about $30,000 per year) directly to the DFG to enhance enforcement capabilities in sanctuary waters.
    - The sanctuary conducts aerial surveys that add to the enforcement coverage.
- Channel Islands National Park (CINP) employs six full-time rangers stationed on the islands.
    - The national park has three patrol boats stationed at the islands, which are primarily used for the enforcement of marine laws and regulations, as well as public safety.

Boundaries:

- The proposed regulation alters the boundaries of the cowcod closure areas to allow deep-water fishing in the vicinity of the northeast corner of Santa Barbara Island.
- The proposed regulation repeals the existing ecological reserves at Anacapa, San Miguel, and Santa Barbara Islands in order to simplify the overall network, facilitate understanding of the new regulations, and eliminate unnecessary duplication.

Authorizing Legislation and/or Regulation:

- The National Marine Sanctuaries Act (NMSA) (1972) authorizes the secretary of commerce to designate and manage areas of the marine environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, or aesthetic qualities as National Marine Sanctuaries (NMS).
- The Marine Life Management Act (MLMA) (1998) states that fishery management plans will form the primary basis for managing the state's recreational and commercial fisheries.
- The Marine Life Protection Act (MLPA) (2000) sets goals for a comprehensive MPA program in California's marine waters; establishes criteria for selecting MPA sites; requires development by 2003 of a statewide MPA master plan; and creates processes that require a sound scientific basis for the master plan and involvement by interested parties.
- The Marine Managed Areas Improvement Act (2001) establishes a new classification system for marine managed areas (MMAs); incorporates existing MMAs into a new system without changing existing resource protection in a manner consistent with the MLPA; eliminates the use of existing classifications by January 2002; and establishes a consistent designation process to be used by all state entities for MMAs.

Media/ Public Outreach:

- In July, a working draft recommendation was distributed to all participants of the process, the draft reserve network map was posted on the sanctuary's Web site, and the draft proposal was featured in the local newspaper.
- The Channel Islands Web site (*www.dfg.ca.gov/mrd/channel_islands/index.html*) was used to disseminate information and was constantly updated throughout the process. The Web site still serves as an important resource for visitors to the sanctuary.
- Over a hundred news print articles, as well as numerous television and radio spots.

Gulf of Mexico Grouper Closures

Conventional fishery management techniques often ignore the very behaviors and characteristics that put groupers most at risk for overfishing. The grouper closures are the first management plans in use designed to preserve the social structure and the sex ratio of grouper populations. The Gulf of Mexico Fishery Management Council (GMFMC) selected two areas for year-round closure to all fishing where gag spawning is known to occur to study the potential effects of area closures on gag grouper spawning aggregations. The Madison/ Swanson site (115 nautical miles in size) lies south of Panama City, Florida, near the northern part of the primary spawning range, and has high relief habitat. The Steamboat Lumps site (104 nautical miles in size) lies west of Tarpon Springs, Florida, near the southern part of the primary spawning range, and has low relief habitat. Gag may also form spawning aggregations outside of this region, so the total proportion of spawning aggregations protected by the closed areas is likely less than one fifth. GMFMC originally considered a total of eight potential reserve sites within the area where gag spawning aggregations may occur. The total of all the areas that were under consideration for closure was 1,205 square nautical miles. Therefore, the combined 219 square nautical mile closed area represents 18 percent of the total area considered by the GMFMC.

Timeline: (1984 to present)

- History of Reef Fish Management (1984 to 1998):
  - November 1984: Reef Fish Fishery Management Plan (FMP) was implemented (Reef fish include snapper-grouper complex).
  - 1990 to 1998: Amendments I through XV implemented. These amendments made numerous changes to the FMP, including the following:
    - Imposed maximum size limits, recreational bag limits, and commercial catch quotas
    - Prohibited the harvest of jewfish in federal waters
    - Established a moratorium on new reef fish permits for a maximum of three years
    - Established restrictions on the use of fish traps in the Gulf of Mexico exclusive economic zone (EEZ)
    - Created a special management zone (SMZ) with gear restrictions off the Alabama coast
    - Closed the region of Riley's Hump (near Dry Tortugas, Florida) to all fishing during May and June to protect mutton snapper spawning aggregations
    - Implemented a new reef fish permit moratorium for a maximum of 5 years while the council considered limited access for the reef fish fishery
    - Imposed aggregate bag limit of 20 reef fish for all reef fish species not having a bag limit
    - Prohibited the harvest or possession of Nassau grouper in the Gulf EEZ, consistent with similar prohibitions in Florida state waters, the south Atlantic EEZ, and the Caribbean EEZ.

- Need for Action (1998 to 1999):
  - August 1998: The Reef Fish Stock Assessment Panel (RFSAP) reviewed the gag grouper stock assessment prepared by National Marine Fisheries Service (NMFS) in October 1997 and determined that gag populations fell into a critical range and new management needed to be considered.
  - September 1998: Based on the gag stock assessment, work began on a new FMP amendment.
  - October 1998: NMFS listed gag grouper as "approaching an overfished condition."
  - November 1998: GMFMC considered the need for an appropriate measure to limit entry into the recreational-for-hire (i.e., charter vessel and headboat) fisheries for reef fish and coastal migratory pelagics in the Gulf of Mexico EEZ.
  - December 1998: GMFMC held seven public hearings for the regulatory amendment to the *Reef Fish Fishery Management Plan to Set 1999 Gag/Black Grouper Management Measures*.

- January 11-14, 1999: The council met in Biloxi, Mississippi to discuss which regulatory measures to implement.
- July – August 1999: GMFMC conducted an educational process to provide information to the public about the concept of marine reserves.
  - July 1999: Two documents were produced: *Marine Reserves for Fishery Management: Questions and Answers* and the *Marine Reserves Technical Document: A Scoping Document for the Gulf of Mexico.*
  - August 1999: GMFC conducted ten public workshops to provide information on the concept of marine reserves and the role they have played as management tools, and to begin to identify (with public help) the critical issues and concerns individuals may have with regard to their use within the Gulf of Mexico.
    - Over 400 statements concerning uses, criteria, and problems with marine reserves were generated through the workshop process.
- August 1999: Council submitted regulatory amendment to the *Reef Fish Fishery Management Plan to Set 1999 Gag/Black Grouper Management Measures (Revised)* to the NMFS. Proposed measures include:
  - Increased size limit of gag for the commercial and recreational fishery
  - Implemented a seasonal closure (February 15 to March 15) on the commercial harvest of gag, black, and red grouper
  - Prohibited the commercial sale of these species during the commercial closed season
  - Established two no-take marine reserves (Madison/Swanson and Steamboat Lumps) within which all fishing except for highly migratory species is prohibited for four years.

- Refine and Implement (2000 to 2001):
  - January 20, 2000: GMFMC prepared an initial regulatory flexibility analysis (IRFA) that describes the impact this proposed rule would have on small entities.
  - January 26, 2000: NMFS published the proposed rule in the *Federal Register*, with a comment period ending on February 10, 2000.
    - NMFS received over 600 public comments on the proposed rule, GMFMC members opposing portions of the regulatory amendment submitted three minority reports, and NMFS Southeast Fisheries Science Center expressed concerns.
  - May 12, 2000: NMFS prepared a final regulatory flexibility analysis (FRFA) that describes the impact of the final rule on small entities. The FRFA was based on the IRFA, public comments, and subsequent analysis by NMFS.
  - May 19, 2000: NMFS published the final rule in the *Federal Register*.
  - June 19, 2000: Final rule implemented.
  - August 2000: Coastal Conservation Association (CCA) filed suit against NMFS to protect rights of recreational fishermen.
  - June 2001: Settlement between CCA and NMFS which will allow recreational anglers to troll previously restricted areas for pelagic species, such as billfish and tunas, while still prohibiting bottom fishing for stressed gag grouper stocks.
  - A four-year sunset clause was included in the proposed alternative to give NMFS and GMFMC time to evaluate the utility of marine reserves.
    - Continuation of the Madison/Swanson and Steamboat Lumps marine reserves beyond June 2004 requires the council to go through a reef fish plan amendment.
    - Non-action will result in expiration of the two reserves on June 19, 2004.

- During the closure development process, another action took place on the side.
  - February 1999: GMFMC requested to set the overfishing threshold at a fishing mortality rate equal to 30 percent static SPR, and the overfished threshold at 30 percent transitional SPR in the

Generic Sustainable Fisheries Act Amendment to fishery management plans of the Gulf of Mexico. (Note: raising the threshold strives to leave a greater number of fish to spawn.)
  - November 17, 1999: NMFS approved a maximum fishing mortality threshold (i.e. overfishing threshold) of 30 percent SPR for gag and black grouper.
  - May 19, 2000: NMFS published the final rule in the *Federal Register*.

Objectives:
- To protect habitat known to be spawning areas for gag grouper along with other groupers and snappers.
- To protect a portion of the male gag population, which appears to have declined drastically in recent years in proportion to females (males tend to stay offshore year-round while females redistribute closer to shore outside of spawning season).

Current Status/Outcome:
- Prohibits all fishing except trolling for Atlantic highly migratory species, including tuna, marlin, oceanic sharks, sailfishes, and swordfish.
- Includes a four-year sunset provision (the no take areas will expire June 16, 2004) to allow time to evaluate their effectiveness before deciding whether to allow them to continue, and to stop possible negative impacts if the objectives are not met.
- Question of whether to initiate development of a plan amendment to continue the Madison/Swanson and Steamboat Lumps reserves:
  - GMFMC prepared a scoping document (June 2002).
  - GMFMC held two public scoping meetings (June 2002).

Stakeholders:
- Concerned citizens
- Commercial and recreational fishers
- Scientists
- Nongovernmental agencies
  - Coastal Conservation Association – Florida
- Governmental agencies
  - U.S. Department of Commerce, National Oceanic and Atmospheric Administration
    - National Marine Fisheries Service, Highly Migratory Species (HMS) Division
  - State of Florida
    - Florida Department of Environmental Protection
    - Florida Marine Fisheries Commission
    - Fish and Wildlife Conservation Commission
  - Gulf of Mexico Fishery Management Council

Advisory Groups:
N/A

Economic Factors:
- (Seasonal closure) Based on logbook data, percent total landings of gag, black, and red grouper were calculated between February 15 and March 15 from 1993 to 1998.
  - Applying percent reduction to landings, reductions in commercial revenues would be approximately $0.43 million for gag, $0.13 million for black grouper, and $0.97 million for red grouper.
- (Year-round closure) Exact economic impacts cannot be properly assessed in the absence of necessary information on fishing activities in the subject areas.

- If the closure leads to increased grouper stocks, then it will be perceived as beneficial. However, still waiting to see results.

Areas of Conflict/ Difficulty:

- The council's initial intent was to prohibit the use of any fishing gear within the closed areas in order to maximize enforceability of the closed area as well as minimize the negative impact from incidental catch and release of reef fish while targeting other species.
  - GMFMC asked that the NMFS Highly Migratory Species (HMS) Division implement a compatible closed area for the species under their management jurisdiction (tunas, swordfish, oceanic sharks, and billfishes).
- This led to a legal challenge from the Coastal Conservation Association (CCA), a recreational fishing organization.
  - CCA felt that the no-take areas unfairly restricted recreational access to the resource, and restrictions on fishing for migratory species higher up in the water column were unwarranted.
- As part of a settlement, NMFS agreed to hold the council's request while research is conducted on the impact of the no-take areas, the effect of pelagic trolling on reef fish species, and the impact on enforceability by allowing pelagic trolling in the no-take areas.

Decision-Support Tools:

N/A

Enforcement:

- Relies heavily on self-policing and Coast Guard surveillance
- Future potential for vessel monitoring systems (VMS) to monitor commercial vessel locations

Boundaries:

- Refer to the *Reef Fish Fishery Management Plan to Set 1999 Gag/Black Grouper Management Measures (Revised)* and/or the *Federal Register* (January 26, 2000) for boundary coordinates.

Authorizing Legislation and/or Regulation:

- Magnusun-Stevens Fishery Conservation and Management Act works to set a national standard for fishery conservation and management, and apply those national standards by authorizing regional fishery management councils to prepare fishery management plans for each fishery.
- Closed areas will continue to be considered as part of the development of the council's Reef Fish Plan Amendment 18, which is intended to be an overall review of grouper management in general.
- During seasonal closure (February 15 through March 15), no one is allowed to buy or sell gag, black, or red grouper and no one aboard a vessel who holds only a commercial permit for Gulf reef fish may possess any of these three species in the Gulf.

Media/Public Outreach:

- NMFS news releases
- NOAA press releases
- Violation hotline
- GMFMC educational process on marine reserves:
  - Publications:
    - *Marine Reserves for Fishery Management: Questions and Answers*
    - *Marine Reserves Technical Document: A Scoping Document for the Gulf of Mexico*
  - Public workshops

Carl N. Schuster Jr. Horseshoe Crab Reserve

Horseshoe crab populations in the U.S. are most abundant in Delaware, Maryland, and Virginia around Delaware Bay. However, in recent years, fishing efforts have shifted dramatically from state waters to mid-Atlantic federal waters, leading to concerns of population declines. These declines would have many consequences. Migratory shorebirds rely on horseshoe crab eggs for food during their spring migration north to Canada. Additionally, horseshoe crab blood has an extensive infection fighting system, and has improved the ability of pharmaceutical and medical device manufacturers to assure that their products are free of contaminating endotoxins.

In 2001, the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) created a horseshoe crab closure that is roughly rectangular in shape, encompassing about 1,500 square miles of federal waters. It adjoins state waters south of Pecks Beach, New Jersey, to just north of Ocean City, Maryland. The closure is named the Carl N. Schuster Jr. Horseshoe Crab Reserve in honor of the retired College of William & Mary professor, who is considered a leading horseshoe crab biologist and researcher.

The taking of horseshoe crabs is the only activity not permitted within the closure, but there are two exceptions written into the regulations. A biomedical company, Limuli Laboratories, was granted an "exempted fishing permit" to obtain blood from 10,000 horseshoe crabs per year for three years, and release them back into Delaware Bay water. Additionally, the Virginia Polytechnic Institute and State University's Department of Fisheries and Wildlife Science obtained a "scientific research activity" permit to conduct a pilot trawl study to develop a protocol for a coast-wide horseshoe crab monitoring. Both activities were restricted to the months of September and October.

Timeline: (1998 to 2001)

- Atlantic States Marine Fisheries Commission (ASMFC) approved an Interstate Fishery Management Plan for the horseshoe crab in 1998, and Addendum I to the plan in February 2000. Under Addendum I:
  - A variety of new requirements in state waters were implemented to better monitor and manage the horseshoe crab fishery, including the establishment of a state-by-state quota.
  - ASMFC recommended to NMFS that it should 1) establish an offshore horseshoe crab sanctuary in federal waters within a 30 nautical mile radius of the mouth of Delaware Bay, and 2) prohibit the transfer of horseshoe crabs in all federal waters.
- May 3, 2000: NMFS published an advance notice of proposed rulemaking (ANPR) to ask the public to consider a closed area.
  - Asked if there was a need to close fishing for horseshoe crabs seaward from the mouth of the bay, and if so, what shape and size a closure should be.
  - Comment period for ANPR process closed June 2, 2000.
  - 281 comments were received for continuing rulemaking process; only 1 comment was against a closure.
    - 13 conservation organizations (membership estimated at over one million people)
    - States of Delaware, Maryland, and New Jersey
    - Opposition letter from Chesapeake Bay Packing L.L.C. – wrote on behalf of two Virginia conch-processing companies (Chesapeake Bay Packing and Bernie's Conchs). The commenter felt that measures were not scientifically justified, and would force harvest to inshore areas where females are more abundant.
- During the closure development process, another action took place on the side. In accordance with the Atlantic Coastal Fisheries Cooperative Management Act, NMFS determined on July 7, 2000, that

the Commonwealth of Virginia was not in compliance with Addendum I to the ASMFC Interstate Fishery Management Plan.
    - Department of Commerce established federal moratorium to ensure that Virginia complies with the ASMFC measures.
    - Moratorium was to be effective October 23, 2000, but was immediately withdrawn as Virginia agreed to comply with regulations.
- NMFS prepared an initial regulatory flexibility analysis (IRFA) that describes the impact this proposed rule would have on small entities, if adopted.
- September 2000: Series of three public scoping meetings
    - 22 comments were received in favor of proposed closure area and 14 against it
- A proposed rule was published October 16, 2000, with comment period ending on October 31, 2000:
    - 58 written comments were received: 54 in favor of the rule and 4 against it
    - 38 comments were received after deadline, among which only 1 was against it
    - Some requests for modification to rule
- February 5, 2001, NMFS announced a ban on fishing for horseshoe crabs in federal waters off the mouth of the Delaware Bay.
- Closed area effective as of March 7, 2001.

Objectives:
- To conserve the Delaware Bay population of horseshoe crabs at a level that can sustain the fishery.
- To help ensure that declining populations of migratory shorebirds have an abundant source of horseshoe crab eggs to feed on when they stop to rest in the Delaware Bay before flying north to their Canadian nesting areas.

Current Status/Outcome:
- Closed area prohibits fishing and trawling for horseshoe crabs within the boundaries, while other fisheries remain open.
- Some adjustments were made to the type of fishing gear allowed on whelk fishing vessels in the area, after public input about how the fisheries operate in the area.
- The transfer of horseshoe crabs is prohibited in all federal waters.
- NMFS awarded a $10,000 grant for a pilot program to introduce horseshoe crab bait bags into Mid-Atlantic whelk fisheries. These plastic mesh bags dramatically reduced the amount of horseshoe crab bait needed per whelk trap. A second $10,000 has been issued in 2002 to extend the program into the New York and New England whelk fisheries.

Stakeholders:
- Biomedical companies
- Commercial and recreational fishers (i.e., conch and whelk fishers)
- Concerned citizens
- Conservationists
- Scientists
- Nongovernmental agencies
    - American Bird Conservancy
    - Delaware Audubon Society
    - Delaware Nature Conservancy
    - Delaware Nature Society
    - Ecological Research and Development Group
    - Sierra Club
    - World Wildlife Fund
- Governmental agencies

- U.S. Department of Commerce
  - National Oceanic and Atmospheric Administration
    - National Marine Fisheries Service
- State Natural Resource Agencies
  - Delaware
  - Maryland
  - New Jersey
  - Virginia
- Atlantic States Marine Fisheries Commission
- Potomac River Fisheries Commission

Advisory Groups:
N/A

Economic Factors:
- Approximately 3 million horseshoe crabs, worth about $3 million in landings, were collected in 1999 along the U.S. Atlantic coast for use as bait in eel, whelk, and catfish fisheries.
- Approximately 1.8 million horseshoe crabs, worth about $2 million in landings, were collected in 2000 along the U.S. Atlantic coast for use as bait in eel and whelk fisheries.
- Out of 18 vessels affected, 8 direct their fishing effort on horseshoe crabs, and 10 harvest and sell horseshoe crabs that were caught incidentally while directing their fishing effort on other species.

Areas of Conflict/Difficulty:
- According to Carl N. Schuster, horseshoe crab biologist and researcher, fishermen think the reserve is too large and that regulations were premature based on insufficient information.
- 14 Atlantic states including Delaware, Maryland, and New Jersey have taken action to implement horseshoe crab conservation measures. Until threatened with a federal moratorium, Virginia refused to abide by the ASMFC ruling, effectively wiping out the conservation efforts made by neighboring states.
- Initiative took months to work out, and almost fell apart with change in presidential administrations (Dr. Carl N. Schuster, Personal Communication).

Decision-Support Tools:
N/A

Enforcement:
- U.S. Coast Guard enforces the closure.

Boundaries:
- Due to difficulty of enforcing a closed area in the shape of a semicircle, NMFS established a closed area that would be roughly rectangular in shape. Refer to February 5, 2001, *Federal Register* (volume 66, number 24) for boundary coordinates.
- An area encompassing a 30 nautical mile radius of the Delaware Bay reasonably balances the need to protect horseshoe crabs (based on scientific evidence of crab migration throughout the bay), and the need to consider impacts on the fishing and biomedical industries (*Federal Register*: February 5, 2001, (volume 66, number 24).
- Lines were drawn by NMFS after consultation with adjoining state fisheries agencies (New Jersey, Delaware, Maryland, and Virginia), and after review of biological survey data and literature on the area.

Authorizing Legislation and/or Regulation:

- Atlantic States Marine Fisheries Commission (ASMFC), consisting of 15 Atlantic coastal states, works in cooperation with the District of Columbia and the Potomac River Fisheries Commission to manage horseshoe crab fisheries in state waters. The commission established guidelines that all Atlantic coastal states must reduce their horseshoe crab bait catch by 25 percent.
    - ASMFC also recommended a prohibition on fishing for horseshoe crabs in federal waters within a 30 nautical mile radius of the mouth of the Delaware Bay.
- In absence of a federal fishery management plan, regulations have been established under the authority of the Atlantic Coastal Fisheries Cooperative Management Act, which gives the Department of Commerce authority to implement federal measures compatible with the interstate commission's fishery management plan.
    - Under this authority, the National Marine Fisheries Service of NOAA banned fishing for horseshoe crabs in federal waters off the mouth of the Delaware Bay, and suggested permitting and reporting requirements for vessels, dealers that sell them, and prohibiting at-sea vessel transfers of horseshoe crabs.
- New England, Mid-Atlantic, or South Atlantic Fishery Management Councils could develop regulations, but have chosen not to do so.

Media/Public Outreach:

- New Jersey chapter of the Sierra Club, which compiled strong scientific facts to share with activists via the Web and list servers
- NOAA press releases
- National Audubon Society press releases

California Marine Life Protection Act (MLPA)

Recent legislation requires that the California Department of Fish and Game (DFG) develop a plan for establishing networks of Marine Protected Areas (MPAs) in California waters to protect and preserve ecosystem integrity. Sponsored by the Natural Resources Defense Council, the bill was supported by conservation, diving, scientific, and education groups. The act marks the first legislation in the country to mandate the development of a comprehensive siting process for MPA networks in state waters.

Overall, the act is designed to "establish a clear mandate for the Department of Fish and Game to overhaul its fragmented array of marine 'protected' areas, making way for a coordinated system to help preserve wild ocean places and sustain sea life." The act requires the DFG to develop a master plan for MPAs in California that includes information on specific site recommendations, implementation and phasing, funding, monitoring, enforcement, and management. The act's overarching goals are to protect marine biodiversity, ecosystem integrity, recreational and educational opportunities, and the economic value of marine resources. More specifically, it aims to restore existing MPAs and site new ones, anchor the process in reliable science, involve the public, and require peer review.

Timeline: (1999 to present)

- Initial Development (1999 to 2000)
  - The Marine Life Protection Act (MLPA) (Assembly Bill [AB] 993):
    - Introduced by Assembly Member Shelley on February 25, 1999
    - Effective January 1, 2000
  - The master plan team met monthly from May 2000 through December 2000
  - The act's major points are to:
    - Coordinate a process leading to the development of a master plan for MPAs within state waters that will guide the siting of new MPAs and modify existing MPAs.
    - Direct a process for establishment, modification, or abolishment of MPAs, following the identification of objectives for all MPAs in the current system.
    - Require a reserve component, establishing areas in which "all extractive activities, including the taking of marine species, are prohibited," except for scientific purposes.
    - Obligate the DFG to observe guidelines for the participation of scientists, other state and federal agencies and affiliates, fisheries, marine conservationists, and the general public.
    - Establish a timeline for the DFG to distribute first draft of master plan, convene siting workshops, submit final draft to Fish and Game Commission (FGC), and have FGC adopt the final draft master plan.
- Working Group Process (2001)
  - The master plan team met monthly from January 2001 through December 2001.
  - In June 2001, the DFG introduced initial MPA draft concepts to meet the MLPA goals and requirements.
  - July 2001: DFG released initial maps of the planned reserves for each of four regions of the state.
    - The master plan team divided California marine waters into four regions based on assemblages of similar marine animals, plants, and habitats, including the North marine region, North-Central marine region, South-Central marine region, and South marine region.
      - The team identified eight habitat types to be represented in MPA networks, including spawning and nursery areas, rocky reefs, underwater pinnacles, kelp forests, submarine canyons, and seagrass beds.
    - California's existing MPAs were also evaluated for incorporation into the master plan.
    - The MLPA required that similar types of habitats and communities be replicated, to the extent possible, in more than one state marine reserve in each region.

        - In recommending specific sites, the team considered species that would most likely benefit from protection.
    - Ten siting workshops were held in July 2001 to begin the public input process and receive public comments to review the plan, provide input on the socioeconomic and environmental impacts of various MPA alternatives, help design methods to monitor and evaluate MPAs, and identify methods to encourage greater public participation.
    - August 1, 2001, to December 15, 2001: Due to concern about effectively involving the public in early planning, the DFG held sixty informal small group meetings with various constituent groups.
        - Small group meetings were used to inform constituents of the MLPA process and timeline, gather information on general concerns, and discuss potential processes to complete the MLPA master plan and specific alternatives for MPA siting.
- New Working Group Process (2002)
    - The master plan team continues to meet monthly from January 2002 to present.
    - DFG will be holding a series of facilitated constituent workshops throughout the year to provide a formal forum for constituent input.
    - Under the MLPA, a team of scientists (the master plan team) is helping state agencies prepare a master plan for MPAs in California to examine the status of marine protection on a regional and statewide scale, pointing out both gaps and duplications in the current system.
        - Using the best available scientific evidence, the team will develop a plan for MPAs that will include marine reserves, and consist of a representative variety of habitats and communities.
        - The plan will guide state agencies in siting and managing this MPA "network" to meet the overall goals.
    - DFG and the master plan team reviewed all comments received through the July public workshops, small group meetings, e-mails, faxes, letters, and phone calls.
    - Using this information, DFG created a stepwise process to develop the MLPA master plan. The master plan strives to directly involve a broad range of constituents in the planning of preferred and alternative sites, as well as in developing implementation, phasing, monitoring, and management strategies.
- Stepwise Master Plan Process (Future plans according to MLPA Web site)
    - Step I – Establish Regional Working Groups
    - Step II – Review MLPA Guidelines and Establish a Process Schedule
    - Step III – Discussion of Alternatives
    - Step IV – Determine an Initial Range of Alternatives
    - Step V – Socioeconomic and Scientific Review
    - Step VI – Discussion of Reviews and Alternatives
    - Step VII – Final Draft Presentation and Review
    - Legislative amendment:
        - January 1, 2003: Draft master plan will be submitted to FGC
        - December 1, 2003: FGC will adopt the final master plan with regulations
        - Estimated completion of process: 2005

Objectives:

- To improve the array of Marine Protected Areas (MPAs) existing in California waters through the adoption of a Marine Life Protection Program and a comprehensive master plan.
- Six goals for the MLPA are established in Fish and Game Code Section 283(b):
    - To protect the natural diversity and abundance of marine life, and the structure, function, and integrity of marine ecosystems.
    - To help sustain, conserve, and protect marine life populations, including these of economic value, and rebuild those that are depleted.

- To improve recreational, educational, and study opportunities provided by marine ecosystems that are subject to minimal human disturbance, and to manage these uses in a manner consistent with protecting biodiversity.
- To protect marine natural heritage, including protection of representative and unique marine life habitats in California waters for their intrinsic value.
- To ensure that California's MPAs have clearly defined objectives, effective management measures, and adequate enforcement, and are based on sound scientific guidelines.
- To ensure that the state's MPAs are designed and managed, to the greatest extent possible, as a network.

Current Status/Outcome:

- Still in progress

Stakeholders:

- Commercial and recreational fishers
- Divers (consumptive and nonconsumptive)
- Conservationists
- General public
- Scientists and resource managers
- Business community
- Nongovernmental agencies:
  - The Ocean Conservancy
  - Environmental Defense
  - Natural Resources Defense Council
  - Pacific Marine Conservation Council
- Governmental agencies:
  - U.S. Department of Commerce, National Oceanic and Atmospheric Administration
    - National Marine Sanctuary Program and National Marine Fisheries Service
  - U.S. Department of the Interior, National Park Service
  - State of California
    - California Resources Agency
      - California Coastal Commission
      - California Department of Fish and Game
        - Fish and Game Commission
      - California Department of Parks and Recreation
      - California State Lands Commission
      - San Francisco Bay Conservation and Development Commission
    - California Environmental Protection Agency
      - State Water Resources Control Board
- Pacific Fishery Management Council

Advisory Groups:

- Master plan team:
  - Members represent the following: DFG, the Department of Parks and Recreation, the State Water Resources Control Board, scientists, and Sea Grant
- Regional working groups:
  - Members represent the following: coastal communities (i.e., harbor districts), commercial passenger fishing vessels (CPFV) (charter/ party boats), commercial and recreational fishers, consumptive and nonconsumptive divers, environmental groups, kelp harvesters, nonconsumptive

recreation (i.e., ecotourism), research-education interests (i.e., Sea Grant), scientists, U.S. Department of Defense

Economic Factors:

- During steps I and II of the master plan process, social and economic experts will compile and analyze the spatial alternatives and provide information on potential impacts.

Areas of Conflict/Difficulty:

- MLPA legislation only applies to state waters (within 3 miles of the coast).
- MLPA legislation is presently not funded.
- MLPA legislation does not actually require that reserves be established.
- Initial timeline was inappropriate; process was reevaluated and restructured to take a more regional approach.

Decision-Support Tools:

- The DFG's geographic information system (GIS) laboratory acquired electronic logbook databases from 1998 to 2000 for each fishery and produced catch distribution maps for two primary purposes:
  - Identify major fishing areas to minimize socioeconomic impact to fishermen from the establishment of new MPAs;
  - Identify types of habitat, using targeted species as a proxy, to satisfy the requirements of Fish and Game Code Section 2856(a)(2)(A).

Enforcement:

- Increased enforcement capabilities corresponding to MLPA implementation.
  - Delineating the reserves by using discernible landmarks such as simple compass settings or regular spacing.
  - Radar tracking on all boats.

Boundaries:

- To be determined.

Authorizing Legislation and/or Regulation:

- The Marine Life Management Act (MLMA) (1998) states that fishery management plans will form the primary basis for managing the state's recreational and commercial fisheries.
- The Marine Managed Areas Improvement Act (2001) establishes a new classification system for marine managed areas (MMAs); incorporates existing MMAs into a new system without changing existing resource protection in a manner consistent with the MLPA; eliminates the use of existing classifications by January 2002; and establishes a consistent designation process to be used by all state entities for MMAs.

Media/Public Outreach:

- The Web site (www.dfg.ca.gov/mrd/mlpa/index.html) is used as one way to keep people involved and informed as the MLPA process continues.
- An informational letter was mailed to constituents on approximately April 1, 2001 (approximately 7,500 letters).
  - Supplementary letters were enclosed for recreational and commercial fishermen requesting information on the most important fish and game blocks (10- by 10-mile areas) that they use in their fisheries.

San Juan County Bottomfish Recovery Zones

The San Juan County Bottomfish Recovery Program (BFRP) consists of eight voluntary no-take areas. The recovery areas are intended to help assure the survival of spawners in the bottomfish population, producing an increase in offspring. In addition, increasing bottomfish populations in the recovery areas are expected to enhance fishing in adjacent areas through a spillover effect. The success of this program depends on voluntary participation by concerned fishers who realize the value of allowing spawners to survive in the protected areas. Because voluntary MPAs have no legal standing, local communities can propose and implement them at any time. In terms of adaptive management, voluntary MPAs provide the flexibility required to adjust management strategies when needed with less cost and better compliance.

Timeline: (1972 to present)

- Marine Resource Management Initiative (1972 to 1996):
  - The National Marine Sanctuaries Act (NMSA) of 1972 authorizes the secretary of commerce to designate and manage areas of the marine environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, or esthetic qualities as National Marine Sanctuaries (NMS).
  - In 1983, the National Oceanic and Atmospheric Administration (NOAA) identified the Northwest Straits site for evaluation as a national marine sanctuary and listed it on the National Marine Sanctuary Program's Site Evaluation List (SEL).
  - In 1988, Congress directed NOAA to prepare a designation prospectus on Northwest Straits, and the site became an active candidate.
  - NOAA withdrew the Northwest Straits site from consideration for designation as a national marine sanctuary for reasons related to designation guidance contained in the 1996 reauthorization of the NMSA, and lack of stakeholder support.

- San Juan County Voluntary MPAs (1996 to present):
  - Rockfish and lingcod populations have been in decline since the 1970s, and have continued to decline despite traditional restrictions on commercial and recreational fisheries.
  - Evidence led to public concern about status of marine resources.
  - March 1996: San Juan Board of County Commissioners (BOCC) appointed a local Marine Resources Committee (MRC) to develop a plan to address the list of concerns.
    - MRC mission statement included developing an approach to restore and conserve Bottomfish.
  - (~March 1997) MRC spent one year devising a program called the San Juan County Bottomfish Recovery Program (BFRP) modeled after the Edmonds Underwater Park and the Friday Harbor-to-Point Caution San Juan Island Marine Preserve.
  - MRC consulted with local citizens, scientists, resource managers, and government specialists.
  - MRC held a series of local meetings.
    - Meeting attendees were asked where they used to fish in past years, but cannot at this time due to the "fished-out" status of the location.
    - Locations were noted with tick marks on a map of the area.
  - Interviews with Washington Department of Fish and Wildlife (WDFW) managers.
    - WDFW gave its opinion that it was nearly impossible to get timely protection for the Bottomfish Recovery Zones (BRZs) through fishing regulations.
  - June 1997: Board of County Commissioners passed Resolution 49-1997, thereby designating eight proposed sites as voluntary, no-take BRZs.
    - BRZ sites include: Pt. Lawrence, Bell Island, Charles Island, Pile Point, Limekiln Lighthouse, Kellett Bluff, Gull Rock, and Bare Island

- MRC asked the community to respect these areas on a voluntary basis.
- BFRP contains two program elements that operate simultaneously, including project monitoring (transects for monitoring dives and fish counts), and public outreach/education.
- A coordinator was hired through an Environmental Protection Agency (EPA) grant to oversee these program elements.
- 2000-2001: The Whale Museum was contracted for outreach, essentially adding the program to the on-the-water presence it already offers to inform whale watch boaters of the protective guidelines for whale watch behavior.
- 2001: The Whale Museum was contracted to coordinate an acoustic tagging effort to investigate whether the size of the Limekiln site (as a sample) was large enough to be effective for lingcod.
- 2002: Funding continued for the acoustic work, targeting copper rockfish, and some larval sampling, and also to see if the BRZs are large enough to be effective.
- MRC is currently reviewing the program to consider the scope of the outreach element while taking into account limited funding.

- Northwest Straits Marine Conservation Initiative (1997 to present)**:**
  - In 1997, U.S. Senator Patty Murray and U.S. Congressman Jack Metcalf convened a panel of citizens known as the Northwest Straits Citizens Advisory Commission to assess the ecological health of the Northwest Straits marine ecosystem, and to recommend steps to improve the sustainability of the region.
    - The commission represents the following: conservation interests, economic interests, scientific interests, local and tribal governments, and universities.
  - The commission concluded that the Northwest Straits marine ecosystem and its resources are in serious decline, and the problems cross geographical and jurisdictional boundaries.
  - After a year of research and discussion, the Northwest Straits Citizens Advisory Commission published a *Report to the Convenors,* which concluded that the best approach would be a coordinated effort, blending good science with grassroots consensus building.
  - As a result, Congress authorized the Northwest Straits Marine Conservation Initiative in 1998, which provides a way for local, tribal, state, and community representatives to work together to protect vital marine resources.
  - The commission recommended a model for protecting and restoring marine resources based on a program established in San Juan County, and included a network of local, county-based Marine Resources Committees (MRCs) to be established in each of the seven Northwest Straits counties to protect and restore marine resources.
    - MRCs will coordinate their activities through the Northwest Straits Commission (NWSC), which was formed to provide technical assistance, integrate scientific information, develop ecosystem-level coordination, and guide funding.
  - The performance of the initiative will be measured using the eight Benchmarks for Performance found in the Murray-Metcalf Report.
  - Congress established the MRCs and the NWSC in 1998. The legislation requires the National Research Council to review the commission's efforts, with particular emphasis on the achievement of the Benchmarks for Performance.
    - This local marine conservation initiative expires in six years and includes an authorization for funding to support the effort. In late 1998, federal funds were made available through NOAA to jump-start the process.
  - March 1999 is the effective date for the initiative (when funds were received and available for spending).
  - March 1999, the San Juan County commissioners passed a resolution reauthorizing its MRC and changing some of the provisions to conform to the requirements of the NWSC.

        - In a five-week period during May and June 1999, Skagit, Island, Whatcom, Clallam, and Jefferson counties passed resolutions establishing MRCs and joining the initiative. Snohomish passed its ordinance in September.
    - The seven MRCs each selected a member to represent them on the 13-member NWSC.
    - NWSC met on November 19, 1999, for the first time to organize and establish policies.

Objectives:
- To restore and conserve the bottomfish resources of San Juan County.
- To foster a sense of stewardship in the people of San Juan County, in which they recognize, value, and protect the resources of the waters surrounding the county.

Current Status/Outcome:
- Two sites (Bell Island and Limekiln Lighthouse) are used as long-term monitoring sites to document changes in fish density sites.
    - Reference sites, located outside but near the recovery zones, were also monitored.
- WDFW has surveyed four of the eight BRZs using a video-acoustic technique in order to track efficiency of these areas.
- Grants have been approved to fund the development of additional educational materials in coordination with the San Juan Nature Institute.

Stakeholders:
- Concerned Citizens
- Conservationists
- Commercial and recreational fishers
- Scientists
- Treaty Tribes
- Nongovernmental
    - Friends of the San Juan's
    - People for Puget Sound
    - Puget Sound Water Quality Action Team
    - Soundwatch
- Governmental
    - State of Washington
        - Washington Department of Fish and Wildlife
        - Department of Natural Resources
        - Department of Ecology
        - State Parks and Recreation Commission

Advisory Groups:
- San Juan County Marine Resource Committee
    - MRC members include scientists, politicians, fishers, business owners, and general public.

Economic Factors:
N/A

Areas of Conflict/Difficulty:
- Sites are thought to be too small to achieve protection objectives; however, now that the community supports the initiative, it will be easier to expand the BRZ sites.
- The MRC did not consult the tribes before or during the site identification and adoption process.

- It is unlikely that one person would have the ability to conduct both public outreach and education as well as monitoring dives.
- Not excluding salmon trolling from the BRZs has led to bycatch problems because bottomfish typically do not survive capture and release.
- The signs that mark the BRZ sites are too small, and the project logo is interpreted ambiguously.

Decision-Support Tools:
N/A

Enforcement:
- No-take status is voluntary only, but supported through education and monitoring efforts coordinated by MRC.

Boundaries:
- Each site is marked with signs bearing the project logo: a rockfish held in two hands.
- Signs on shore notify fishers of the BRZs, which extend about 400 yards (366 meters) from shoreline.

Authorizing Legislation and/or Regulation:
- State of Washington has jurisdiction over coastal waters.
- Through its mandated research to support management responsibilities, many of WDFW's marine conservation programs overlap those of the BFRP. Since the outset of the program, there has been close cooperation between WDFW and the MRC.
- The University of Washington's Friday Harbor Labs actively support the program with courses, education, and outreach.
- The Soundwatch program, under the leadership of The Whale Museum, conducts on-water activities directed at protecting resident whale pods. They have recently added BFRP coordination to these duties. This will increase the effectiveness of the program's outreach by having consistent on-the-water presence.

Media/Public Outreach:
- Soundwatch sends a boat to visit the zones several times each month to educate fishers about the bottomfish recovery program using brochures and other educational materials.
- Presentations about the program are made at local schools.
- Video cameras are deployed to survey the bottomfish habitat and then made available to the public.
- An ad was purchased on the back cover of the WDFW Fishing Regulations Booklet (750,000 copies) requesting that fishers respect the no-fishing requests in the BRZs.
- A negotiation was made with the chair of the Einar Nielson/Becky Barr fishing derby at Roche Harbor to modify the derby to minimize damage to rockfish by removing them from the list of prize-winning species.
- Emerald Seas Dive Shop sponsored a "Dive the Reserve" program, while other dive shops organized lingcod nest surveys.

Tortugas Ecological Reserve

The Tortugas Ecological Reserve (151 square nautical miles) was created to protect the critical coral reef ecosystem of the Tortugas region, which lies in the western portion of the Florida Keys National Marine Sanctuary (FKNMS). Due to its remote location, 70 miles west of Key West and more than 140 miles from mainland Florida, the Tortugas region has the best water quality in the sanctuary. Healthy baitfish populations support seabird communities such as sooty and noddy terns, masked boobies, and frigate birds. Additionally, the Tortugas has a high potential for exporting fish and lobster larvae downstream to the Keys and east coast of Florida. Despite the Tortugas' beauty and productivity, studies show that various human uses have led to resource loss and degradation, making protection of the area's unique habitats critical.

The Tortugas Ecological Reserve consists of two sections, Tortugas North and Tortugas South, which required an expansion of the sanctuary boundaries to protect important coral reef resources in the areas known as Sherwood Forest and Riley's Hump. Tortugas North and Tortugas South now fully protect all marine life through regulations that prohibit all consumptive activities in these zones. Tortugas North is open to nonconsumptive diving, and the sanctuary has installed mooring buoys to protect the fragile coral reefs of the area from anchor damage. Tortugas South is open only to vessels in transit, researchers, and educators holding a sanctuary permit. The inclusion of Sherwood Forest and Riley's Hump within sanctuary boundaries allows the sanctuary to control for anchor damage and water pollution from vessel discharges in these sensitive areas.

Timeline: (1990 to 2001)

- Initial Development (1990 to 1997)
  - In 1990, FKNMS was established by the Florida Keys National Marine Sanctuary and Protection Act.
  - In July 1997, the sanctuary implemented a marine zoning plan featuring five zone types. Three of these zone types (ecological reserves, sanctuary preservation areas, and special-use areas) are fully protected zones that prohibit consumptive activities. At that time, 23 fully protected zones were designated.
  - An ecological reserve (110 square nautical miles) was proposed at that time for the Tortugas region—but it was not established because public comments indicated that 1) the proposed boundaries did not include the most significant coral reef resources, and 2) the reserve would cause economic harm to several constituent groups, including commercial fishers.
  - The *Final Management Plan for the Sanctuary* (1996) committed to undertaking a collaborative initiative with the National Park Service (NPS), which was revising its management plan for the Dry Tortugas National Park to determine which areas of the Tortugas region needed zoning protection and what degree of protection was appropriate.

- Tortugas 2000 (1998 to 2001):
  - Phase I – Design phase (1998 to 1999)
    Goal: Apply best-available science to reserve design
    - In February 1998, the Sanctuary Advisory Council (SAC) established an ad-hoc working group to recommend a preferred alternative for an ecological reserve in the Tortugas area.
    - The working group met five times in Key West over 13 months.
    - The working group built up a knowledge base on the Tortugas region using scientific information provided by sanctuary staff and experts, personal knowledge, knowledge passed on by constituents and users of the region, and anecdotal information.

- The working group selected criteria for the reserve and weighted them for importance to aid in selecting an appropriate boundary and regulations for the reserve.
- In May 1999, the working group reached consensus on a preferred alternative for proposed boundaries and regulations for the Tortugas Ecological Reserve.

- Phase II – Solicit comments (June 1999 to July 2000)
  Goal: Maximize public comment
  - In June 1999, a presentation on the working group's process and recommended preferred alternative was given to the Sanctuary Advisory Council (SAC).
  - SAC voted unanimously to adopt the working group proposal, and in turn recommended the same preferred boundary to the National Oceanic and Atmospheric Administration (NOAA) and the State of Florida.
  - In November 1999, the FKNMS and National Marine Fisheries Service (NMFS) requested that the Gulf of Mexico Fishery Management Council (GMFMC) take steps to prohibit fishing under its authority consistent with the purposes and proposed location of the ecological reserve. GMFMC accepted the request and developed an Essential Fish Habitat Amendment in the Gulf of Mexico Fishery Management Plan that includes the area of the reserve.
  - In June and July 2000, six public hearings were held on the reserve proposal.
  - July 12, 2000 – Public testimony was given to the GMFMC before final action taken.
  - Public comments on alternatives in Draft Supplemental Environmental Impact Statement (DSEIS), issued in May 2000, were accepted until July 31, 2000.
  - More than 4,000 comments were received on the Tortugas Ecological Reserve Proposal.
- Phase III – Refine and implement (August 2000 to July 2001)
  Goal: Implement an ecological reserve in the Tortugas
  - After public comment period closed (July 31, 2000), the sanctuary evaluated comments and responded to them in a Final Supplemental Environmental Impact Statement.
  - March 2001: National Marine Sanctuary Program (NMSP) announced that federal waters of the reserve became effective.
  - NMFS published the "Notice of Availability for the Generic Amendment Addressing the Establishment of the Tortugas Marine Reserves in the Fishery Management Plans of the Gulf of Mexico" (Tortugas Amendment) in the *Federal Register* on March 7, 2001.
  - Florida's governor and cabinet gave unanimous approval to include state waters in the Tortugas Ecological Reserve on April 24, 2001.
  - Reserve fully implemented on July 1, 2001.

Objectives:
- To protect nationally significant coral reef resources and to protect an area that serves as a source of biodiversity for FKNMS, as well as the southwest shelf of Florida.

Current Status/Outcome:
- Establishment of the largest fully protected marine reserve in U.S. waters and one of the most significant marine conservation areas in the world.

Stakeholders:
- Concerned citizens
- Conservationists
- Commercial and recreational fishers
- Divers
- Scientists
- Nongovernmental agencies

    - Ocean Conservancy
    - The Nature Conservancy – Florida Keys Initiative
    - ReefKeeper International
    - World Wildlife Fund
- Governmental agencies
    - U.S. Department of Commerce
        - National Oceanic and Atmospheric Administration
            - Florida Keys National Marine Sanctuary
            - National Marine Fisheries Service
    - U.S. Department of the Interior
        - National Park Service – The NPS worked closely with FKNMS to designate a type of fully protected zone called a research natural area within the adjacent Dry Tortugas National Park that is compatible with the Tortugas Ecological Reserve.
        - U.S. Fish and Wildlife Service
    - State of Florida
        - Florida Department of Environmental Protection (FDEP)
        - Florida Fish and Wildlife Conservation Commission (FWCC, formerly the Florida Marine Fisheries Commission)
        - Florida governor and cabinet
    - Gulf of Mexico Fishery Management Council (GMFMC)

Advisory Groups:
- Sanctuary Advisory Council ad-hoc working group (25 members) representing the following:
    - Commercial and recreational fishermen
    - Divers
    - Conservationists
    - Scientists
    - Concerned citizens
    - Government agencies

Economic Factors:
- Moderate economic impacts on lobster and handline fishermen.
- Minimal to no economic impacts on recreational fishermen, commercial shippers, and treasure salvors.
- Economic benefits due to the educational and research value of the reserve, and potential for ecotourism.

Areas of Conflict/Difficulty:
- Initial boundaries proposed for the reserve in the early 1990s were not established because public comments indicated that the proposed boundaries did not include the most significant coral reef resources, and would cause economic harm to commercial fishers.
- Heavy discussion over expanding the boundary of the sanctuary for the purpose of the reserve.
    - The preferred alternative for the ecological reserve expanded the boundary of the sanctuary approximately 36 nautical miles in the northwestern corner, and approximately 60 nautical miles in the south to include significant coral reefs known as Sherwood Forest and Riley's Hump.
- Concern over whether diving should be allowed in Tortugas South. It was determined that except for research and monitoring, diving should not be allowed.

Decision-Support tools:

- Geographic information system (GIS) maps of resources with consistent scales and grid cells were produced so comparisons could be made of uses and resources over space and time.

Enforcement:

- Enforcement contract between the NOAA National Marine Sanctuaries Program (NMSP) and State of Florida Fish and Wildlife Conservation Commission. The State of Florida is the co-trustee for a significant portion (60 percent) of the waters and marine resources within the reserve, and will co-manage these resources with FKNMS.
- NMFS manages the fisheries in federal waters (40 percent) of the reserve. The Office of Law Enforcement has responsibility for enforcing fishing regulations, and has resources and technology to be used for enforcement purposes.
- The U.S. Coast Guard (USCG) has responsibility for enforcing fishing regulations in federal waters. USCG has several large offshore patrol vessels based in Key West that could be used in conjunction with sanctuary patrol vessels for enforcement of the reserve areas.
- Enforcement efforts in the Tortugas Ecological Zone have yielded over 12,500 pounds of illegal catch in 2002 (*www.fknms.nos.noaa.gov/news/*).
- Permit issuance and tracking system for entrance into the Tortugas North section of the reserve:
  - By issuing permits, the sanctuary can ensure that all vessels visiting the reserve have access to mooring buoys;
- Entrance to Tortugas South may only occur under a sanctuary permit for research and education.

Boundaries:

- Refer to *Federal Register* (January 17, 2001) for Tortugas boundary coordinates.

Authorizing Legislation and/or Regulation:

- Other planning efforts were conducted in conjunction with Tortugas 2000 to ensure comprehensive protection of the unique resources of the Tortugas region.
  - The NPS revised its General Management Plan, which included a "Preferred Alternative to create a Research/Natural Area" (RNA) within the park. The proposed boundary and regulations were compatible with NOAA's Tortugas Ecological Reserve.
  - Under the Magnuson-Stevens Fishery Conservation and Management Act, GMFMC has developed an Essential Fish Habitat Amendment in the Gulf of Mexico Fishery Management Plan that includes the area of the reserve.
  - NMFS issued regulations for federal waters consistent with the no-take status of the Tortugas Ecological Reserve for the species covered by the Gulf of Mexico Fishery Management Plan and for Atlantic tunas, swordfish, sharks, and Atlantic billfishes.
  - The State of Florida promulgated fishing regulations to prohibit fishing in those portions of Tortugas North that lie within state waters.

Media/Public Outreach:

- FKNMS has been thoroughly involved with media and public outreach:
  - Multiple press releases were issued to the local and national media.
  - Media and press tours were offered to interpret and highlight all steps of the reserve process.
  - Articles were published in newsletters, journals, and magazines as appropriate.
  - The Tortugas 2000 Web site (*www.fknms.nos.noaa.gov/tortugas/*) was used to disseminate information and was constantly updated throughout the process.
  - A brochure that details the regulations and boundaries for the Tortugas Ecological Reserve, the locations and numbers of mooring buoys, and unique ecological features in the area is under development.